EPRI ELECTRIC POWER RESEARCH INSTITUTE

P201 Back Pocket Insights

KEY INSIGHTS

- **Models suggest that economy-wide emissions may decline 43-48% by 2035 with IRA** from 2005 levels (compared with 27-35% without IRA).

- **IRA could accelerate clean energy deployment:** Wind and solar capacity increases up to four times the pace without IRA; electric vehicles are 30-82% of new vehicle sales in 2035.

- **IRA's abatement costs are likely much lower than recent social cost of carbon estimates**, even before accounting for improved air quality and other co-benefits.

- **Energy costs could be $10-52 billion per year lower by 2035** with IRA ($73-370 per household).

This brief is based on the paper "**Emissions and Energy Impacts of the Inflation Reduction Act**" published in *Science* (2023)

Emissions and Energy Impacts of the Inflation Reduction Act

by J. Bistline, G. Blanford, M. Brown, D. Burtraw, M. Domeshek, J. Farbes, A. Fawcett, A. Hamilton, J. Jenkins, R. Jones, B. King, H. Kolus, J. Larsen, A. Levin, M. Mahajan, C. Marcy, E. Mayfield, J. McFarland, H. McJeon, R. Orvis, N. Patankar, K. Rennert, C. Roney, N. Roy, G. Schivley, D. Steinberg, N. Victor, S. Wenzel, J. Weyant, R. Wiser, M. Yuan, and A. Zhao

New nine-model comparison analyzes the emissions and energy system impacts of the Inflation Reduction Act of 2022 (IRA).

IRA has been billed as the most significant federal climate legislation in the U.S. so far. However, its scope and complexity make modeling important for understanding its potential implications. This multi-model analysis quantifies potential benefits, costs, and other impacts of core energy and climate provisions of IRA.

Economy-wide emissions reductions from IRA span 33-40% below 2005 by 2030 and 43-48% by 2035, compared with 27-35% in 2035 without IRA (Fig. 1). Models agree that IRA could accelerate power sector decarbonization, which accounts for 38-80% of 2030 reductions. Electric sector CO_2 could decline by 66-87% by 2035 from 2005 (39-68% without IRA). Tax credits for zero-emitting resources under IRA continue until electricity emissions are 25% of 2022 levels, and three of nine models reach this threshold by 2035.

IRA could increase generation from low-emitting resources—including renewables, nuclear, and carbon capture—relative to current trends, though there is cross-model variation in these changes. Average annual **wind and solar additions could be up to four times higher than without IRA** and up to three times their 2021 record installations.

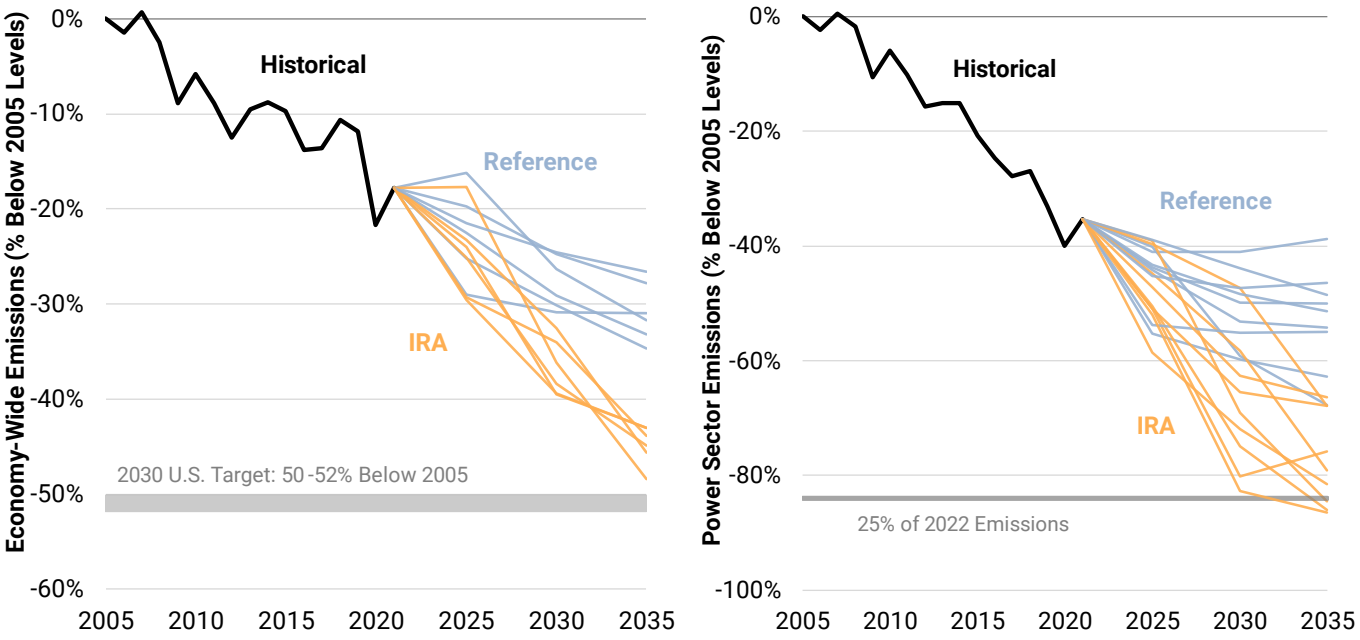

Figure 1. Cross-model comparison of U.S. emissions reductions across the economy (left) and power sector (right) under IRA and reference scenarios without IRA. Based on Bistline, et al. (2023).

Clean electricity could increase to 59-89% of total generation by 2035, compared with 46-74% without IRA. Unabated coal generation could decline 38-92% from current levels within the decade.

IRA encourages end-use electrification and adoption of low-emitting fuels:

- **Electric vehicles could be 30-82% of new sales** in 2035 (27-59% without IRA).
- Electricity's share of final energy could increase from 21% today to 25-29% by 2035 with greater electrification of transport, buildings, and industry.
- These changes could **drive the first sustained period of declining petroleum use**. IRA scenarios show 12-40% declines by 2035 from 2005, but much of this happens without IRA due to transport electrification.
- IRA may catalyze new markets in industry and fuels, including carbon capture, hydrogen, and biofuels, which help to reach net-zero emissions by 2050.

IRA could lower energy costs by $10-52 billion per year for households and businesses in 2035 from the reference.

Climate benefits of IRA could range from $44-220 billion annually by 2030 using central social cost of carbon estimates. **IRA's abatement costs are likely lower than updated social cost of carbon estimates**, even before accounting for improved air quality and other co-benefits: Implied costs per unit of CO_2 reduced could range from $27-100/t-$CO_2$, while mean social cost of carbon estimates could span $100-360/t-$CO_2$ depending on the discount rate.

FOR MORE INFORMATION

Read the full paper: Bistline, et al. (2023), "Emissions and Energy Impacts of the Inflation Reduction Act." *Science*.

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